The Business Value of Microsoft Azure SQL Database and Azure SQL Managed Instance Workloads

Harsh Singh
Senior Research Analyst,
Business Value Strategy Practice, IDC

Carl W. Olofson
Research Vice President,
Data Management Software, IDC

Table of Contents

CLICK BELOW TO NAVIGATE TO EACH SECTION IN THIS DOCUMENT.

Executive Summary

Microsoft Azure SQL Database is a managed cloud database service under the platform as a service (PaaS) model. Its core is a relational database management system (RDBMS) that offers full SQL compatibility with SQL Server. It leverages its cloud-native capabilities to provide high availability and automated operations management. Azure SQL Managed Instance is a managed cloud database service that offers a cloud-native variant of SQL Server featuring complete isolation of customer instances with native VNet support.

IDC conducted research through a series of in-depth interviews with Microsoft customers, exploring the value and benefits for organizations of using Microsoft Azure SQL Database and Azure SQL Managed Instance workloads to support their database applications.

Based on extensive quantitative and qualitative data derived from these interviews, IDC calculates that study participants will realize a significant business value of $4.52 million per organization with a very substantial 406% three-year return on investment by:

- **Improving the overall efficiency of IT operations** including work performed by database administrators and IT infrastructure, security, and other IT-focused teams
- **Boosting the productivity of business-related teams** including those dedicated to data analytics and applications development
- **Achieving better business results** by generating new revenue streams and ensuring customer satisfaction with timely and high-performing applications, products, and services
- **Reducing the incidence of unplanned downtime** leading to improved end user productivity

Business Value Highlights

Click each highlight below to navigate to related content within this document.

406%
three-year ROI

6 months
to payback

30%
reduced cost of operations

45%
more efficient DBA teams

29%
more efficient IT infrastructure management teams

25%
more productive IT security teams

12%
more productive business analytics teams

66%
reduction data-loss related productivity issues

$6.85 million
additional revenue gained/protected annually

27%
more productive application development teams

Situation Overview

For quite some time now, many enterprises have used Microsoft Windows Server as the principal operating environment for their datacenters, and Microsoft SQL Server as the principal RDBMS for managing their most critical data. Those same enterprises are now looking to migrate to the public cloud. Their commitment to SQL Server means that they wish to maintain this RDBMS going forward. Because Microsoft offers a public cloud platform, Microsoft Azure, that provides continuity of support for users' Windows applications and SQL Server databases, their preference is to migrate to Azure, although there are alternative hosting options on other public cloud platforms.

Azure SQL Database and Azure SQL Managed Instance Overview

Microsoft SQL Server is Microsoft's flagship RDBMS. The company has offered SQL Server since 1989. Azure SQL Managed Instance is a cloud-engineered version of the product designed to offer complete operational compatibility while also delivering the benefits of cloud operation. It runs as instances individually managed on behalf of the user in an isolated manner, communicating with applications over Azure Virtual Network (VNet). Because Azure SQL Managed Instance is nearly 100% compatible with SQL Server's SQL and features, users can port their existing applications with virtually no effort using the Azure Database Migration Service. Over time, they may consider migrating from there to the fully cloud-enabled and feature-rich Azure SQL Database.

Azure SQL Database is Microsoft's cloud-native RDBMS, which runs on Microsoft Azure and takes maximum advantage of Azure features and services. Since it was born in the cloud, every detail of its operations is designed to take advantage of the on-demand nature of cloud resources and deliver the best performance and scaling possible and to offer functionality that only a cloud-native RDBMS can provide. It is SQL compatible with SQL Server, but data migration may require some effort, which is why many customers choose to move to Azure SQL Managed Instance first, and then to Azure SQL Database by stages.

In comparing the two, one must understand that Azure SQL Managed Instance is more compatible, offering near transparent functionality compared with the on-premises datacenter version of SQL Server, but Azure SQL Database offers better value for money over time.

The Business Value of Azure SQL Database and Azure SQL Managed Instance

Study Firmographics

IDC conducted research that explored the value and benefits for organizations of using Microsoft Azure SQL Database and Azure SQL Managed Instance workloads to support their SQL-based applications and databases. The project included eight interviews with organizations that are using Azure SQL Database and Azure SQL Managed Instance and have experience with or knowledge about the benefits and costs of using it. During the interviews, companies were asked a variety of quantitative and qualitative questions about the solution's impact on their IT applications and databases, core businesses, and costs.

Table 1 presents the aggregated firmographics of interviewed organizations. The organizations that IDC interviewed had a base of 25,525 employees with annual revenues of $6.4 billion, indicating the involvement of several large companies. This workforce was supported by an IT staff of 940 managing 758 business applications. There was a good mix of vertical markets represented including the retail, healthcare, financial services, manufacturing, and professional services sectors. (Note: all numbers cited represent averages.)

TABLE 1

Firmographics of Interviewed Organizations

	Average	Median	Range
Number of employees	25,525	9,250	1,950 to 70,000
Number of IT staff	940	400	45 to 5,000
Number of business applications	758	210	30 to 2,500
Revenue per year	$6.4B	$3.5B	$400.0M to $25.0B
Industries	Retail (3), healthcare (2), financial services, manufacturing, professional services		

Source: IDC Business Value Research, June 2023

Choice and Use of Azure SQL Database and Azure SQL Managed Instance

The organizations interviewed by IDC described their rationale for selecting Azure SQL Database and Azure SQL Managed Instance to support their SQL-based applications and databases cost effectively. Study participants noted that the platform gave their organizations the ability to reduce overall IT infrastructure and operations management burdens while improving scalability and security. Organizations appreciated the platform's ability to modernize their data structure and infrastructure needs. In addition, interviewed organizations noted that the platform helped them to be more nimble as an organization and highlighted favorable price/performance considerations.

Study participants elaborated on these and other selection criteria:

Reducing management burden while improving scalability and security, retail:

"There were multiple challenges that made us look at Azure. Scalability was one of the challenges. We had challenges with hiring more folks who are looking at managing and updating the applications and libraries at all times of the day, so we wanted to ensure we have fewer people to maintain which is why we looked at Azure SQL Managed Instance. The last thing is the security. Our data has to be secure but to secure it ourselves in-house, then we have to spend manhours on doing that."

Trying to modernize their data structure and infrastructure needs, financial services:

"The first challenge is still ongoing, and it's a large-scale issue that the company had 30 years' worth of data on-premises broken up across 12 different systems. So the first piece of making the move to Azure was to consolidate all of those into one space. The second situation is with COVID, that if we're moving away from on-premises and we're no longer going to be in the office every day, then that just becomes another reason to decentralize a space for data to be held. This all actually started at the end of 2019, and once COVID really came to the forefront, we just pushed the rate speed up on that."

Looking to be nimbler as an organization, manufacturing:

"One of the main reasons we went to Azure SQL is our DBA time is sometimes hard to come by because they were stretched. We like moving fast. We like to have control of our own resources. Following more of a DevOps model, we're allowing our developers to just get in there, spin up their environment using infrastructure-as-code and get new apps off the ground."

Could support various business needs while helping keep costs down, retail:
"The fully managed approach helps us have bifurcated systems. So right now, all the reports and the AI/ML capabilities that we are trying to run, and the customers' demands that we are trying to run, are all completely on Azure SQL. We are able to create those elastic pools to accommodate or share resources and all this stuff. The other point is we are heavy on license usage, and we were able to bring our own license in SQL, and that also helped us."

Table 2 describes the organizational usage associated with interviewed companies' deployment of Azure SQL Database and Azure SQL Managed Instance. On average, companies reported 65 databases and 62 database servers supporting 101 applications. Those applications are supporting about 42% of their total revenue which indicates several external-facing applications are being supported by Azure SQL Database and Azure SQL Managed Instance. Additional metrics are presented.

TABLE 2

Organizational Usage of Azure SQL Database and Azure SQL Managed Instance

	Average	Median
Number of terabytes (TB)	166	32
Average number of Azure SQL Database and Azure SQL Managed Instance	89	50
Maximum number of Azure SQL Database and Azure SQL Managed Instance	235	52
Number of databases	65	29
Number of database servers	62	15
Number of applications	101	40
Number of internal users	9,615	5,625
Percentage of revenue supported by applications and databases supported by Azure SQL Database and Azure SQL Managed Instance	42%	30%

Source: IDC Business Value Research, June 2023

Business Value and Quantified Benefits

IDC's Business Value model quantifies the benefits for organizations using Azure SQL Database and Azure SQL Managed Instance to support their SQL-based applications and databases cost effectively. Interviewed companies uniformly found that the solution improved the overall efficiency of their IT operations including work performed by database administrators as well as IT infrastructure, security, and other IT-focused teams. In addition, the platform served to boost the productivity of business-related teams, including data analytics and applications development teams. These improvements in IT support for line-of-business (LOB) teams helped companies achieve better business results by generating new revenue streams and ensuring customer satisfaction with timely and high-performing products, services, and applications. In addition, the Azure SQL Database and SQL Managed Instance platform served to reduce the incidence of unplanned downtime, leading to improved end user productivity.

In their comments to IDC, study participants described these and other benefits in detail:

Reduced infrastructure and other costs, healthcare:

"Azure SQL Managed instance was able to not only combine a bunch of disparate databases, but also reduced a lot of our on-premises costs because these databases were large, and they were using a lot of storage. Storage is expensive when it's redundant. It also allowed us to put up redundant architecture for the application with ease. That type of redundancy in the application is more along the DR range. So we have a very easy way to spin up a second environment and keep it all going without having to pay for the hardware that's not being used. It reduced our costs by $200,000 a year."

Improved data structure means faster access to data, financial services:

"The biggest thing is the efficiency in grabbing data. If you wanted to know what sector in 2005 we were the best at, I could pull that information in real time in a couple hours, versus our old model where I would have to tell you that I'm going to need the rest of the week to get back to you on that. The other space that has me really excited moving forward is being able to pull data from multiple groups. One of the big issues we had before we made the move over to Azure is that data was siloed, and that led to inefficiencies in everything. Being able to have all the data I could possibly need at my fingertips is a huge thing. The third one is more interoperability inside of the company. Being able to work on projects with different teams and different zones and different countries will be something else to maximize the Azure rollout."

Could support business growth securely, retail:

"The first point with Azure SQL is security. Right now, we are not worried about it because it's in the cloud, and obviously it's more secure than what we had on premises. The second thing is licensing is covered. The system has become more stable now in Azure, and it's

more powerful so we are able to get more out of it. We are a live TV business where we sell products over TV, so we are getting more customer transactions converted from our IVR, which is where people call in and buy or put in their orders. So, we are able to process customers faster now, and there is more transactional speed to the system."

Able to scale up resources with ease for DevOps, manufacturing:

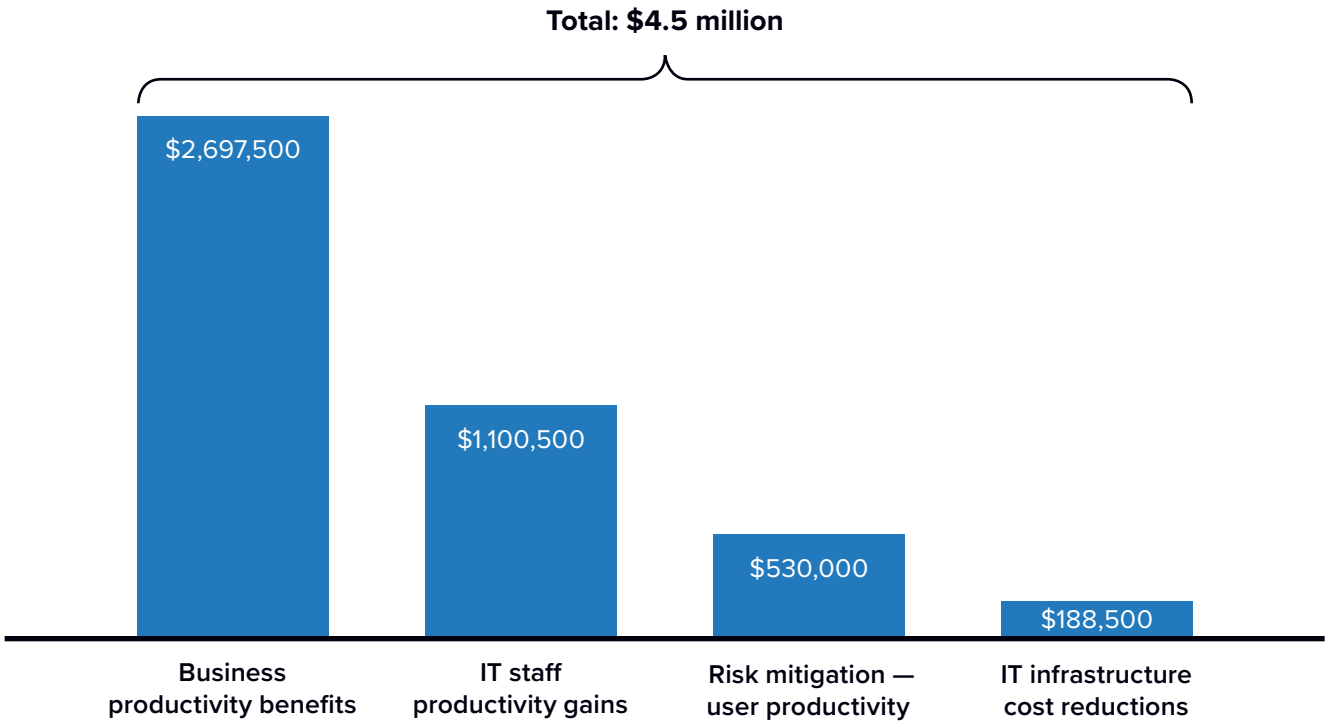
"We use Azure SQL Databases as part of a DevOps model, meaning that we as a developer organization are able to deploy instances without DBAs through code or manually and create schemas, so we can interact with it however we want to. There are no longer many limitations that we have to go through that requires DBAs so there are fewer telephone tickets."

Based on interviews with the eight intensive users of Azure SQL Database and Azure SQL Managed Instance, IDC quantified the value study participants will receive as an annual average of 406% return on investment (ROI) over three years, a total of $4.52 million for each organization (see **Figure 1**).

FIGURE 1

Annual Average Benefits per Organization

($)



n = 8; Source: IDC Business Value Research, May 2023

Table 3 presents a more granular view of this data with an annual average benefits breakdown taking into consideration a number of sub-categories such as per database, per hundred users, and per business application.

TABLE 3

Annual Average Benefits Breakdown

	Total Annual Benefits	Business Productivity	IT Staff	Risk Mitigation	IT Infrastructure Cost
Per organization	$4.52M	$2,70M	$1,10M	$529,000	$188,500
Per database	$69,800	$41,700	$17,000	$8,200	$2,900
Per 100 users	$47,000	$28,100	$11,400	$5,500	$2,000
Per business application	$44,800	$26,700	$10,900	$5,300	$1,900

Source: IDC Business Value Research, June 2023

Operational Impacts and Benefits

Digital technology and innovation have delivered resiliency and revenue, and as a consequence, enhanced business opportunity to enterprises. These have become of great importance in the face of a variety of global challenges including financial turbulence and ongoing supply chain disruptions. But going forward, IDC anticipates the emergence of a divide between organizations that are able to scale development of digital innovation and those that cannot. A critical enabler will be the ability to innovate using key digital transformation technologies.

Data and data analytics will play increasingly important roles in delivering insights to businesses and delivering desired business outcomes. The use of database management systems (DBMSs) has shown solid growth in recent years due to the range of database technologies and the various use cases they support. Increasing volumes of data continue to drive growth along with the shift to cloud-based infrastructure. However, challenges remain.

Both Azure SQL Database and Azure SQL Managed Instance solutions are designed to support data growth by providing a fully managed database service that automates updates of SQL versions, provisioning, and backups. These updates include critical security patches

designed to protect against known vulnerabilities, which emerge all the time. These services ensure current and secure operation while freeing up IT to focus on application development. In addition, intelligent threat detection keeps data secure, and for Azure SQL Database, flexible and responsive serverless compute and hyperscale storage help companies adapt to changing requirements.

Interviewed organizations confirmed that Azure SQL Database and Azure SQL Managed Instance addressed many of the challenges they faced. In their comments, they noted reductions in platform infrastructure costs and management burden. They also appreciated that Azure provided better ease of management thereby freeing up DBA staff to focus on core database operations rather than firefighting and routine maintenance.

Study participants elaborated on these and other benefits:

Frees up DBA time to focus on databases instead of firefighting, healthcare:

"It has changed in that the DBA no longer deploys the servers and the databases. They're just doing the DDL and the DBM. We're taking care of all that deploying in the background like creating Active Directory users and Active Directory groups for the team that the databases are for. It reduced the load on the DBAs so that they have more time to spend on actually designing and implementing databases as opposed to building them and setting them up for use."

Ease of management, retail:

"We are more hands-off, in the sense that Microsoft is basically managing it and providing the platform. We're not managing it like we used to in terms of patching or worrying about hardware."

Reduction in infrastructure costs and management burden, professional services:

"It would probably be about 40% more expensive because there are so many costs involved in managing the on-premises infrastructure vs. just spinning up a database instance in Azure. I would need to maintain security, servers, storage, and the rack space in the data centers that we rent."

DBAs can work on other projects, professional services:

"It was a full-time job before for our single DBA and now we are introducing him to some NoSQL technologies because he has the bandwidth. He's been doing SQL DBA work for 15 years, so it's good for him to start exploring something new and keep his resume fresh. As of 2020, we could not do that, we had to hire another team to help us explore those opportunities and new technologies. But now he is now part of that team, and his responsibilities have been cut more than half just to manage SQL. Now, he's able to utilize his extra time helping develop our NoSQL data lake."

To get a full picture of the impacts of Azure SQL Database and Azure SQL Managed Instance, IDC evaluated specific ways that the solution improved the performance of various IT teams, beginning with DBA staff. Organizations reported that staff spent more time innovating and less time patching, updating, and backing up databases because Azure SQL automates these processes. In addition, complex tasks like performance tuning, high availability, disaster recovery, and backups are all automated, further freeing up staff time.

Interviewed companies reported that with Azure, DBAs reduce their management burden in setting up infrastructure needed to support databases and gave them 45% of their time back to work on other projects. As one study participant noted: *"Before Azure SQL, there were cases where the system got stuck multiple times in a day with on-premises and required order management and database administrator attention. Now, with Azure SQL, the team is working on more productive stuff, such as having DBAs in project management to rewrite old queries. So, we're utilizing their time in more strategic ways."*

Table 4 quantifies impacts for DBA teams. After adoption, interviewed companies saw a 45% improvement in team productivity, essentially freeing up 2.8 FTEs to work on higher value projects instead of day-to-day maintenance. IDC calculated that this translated into an annual business value of $284,700 for each organization.

TABLE 4

Database Administrator Staff Impact

	Before Azure SQL Database and Azure SQL Managed Instance	With Azure SQL Database and Azure SQL Managed Instance	Difference	Benefit
DBA team FTE per organization per year	6.3	3.5	2.8	45%
Equivalent value of staff time, one-time	$633,300	$348,700	$284,700	45%

Source: IDC Business Value Research, June 2023

IDC then looked at impacts for IT management teams. Interviewed companies reported staff time reductions for their day-to-day infrastructure needs to support their SQL-based databases and applications. **Table 5** quantifies the impacts for IT management teams. After adoption, interviewed companies saw a 29% improvement in team productivity, essentially freeing up 4.3 FTEs to work on more strategic projects. IDC calculated that this translated into an annual business value of $434,000 for each organization.

TABLE 5

IT Management Staff Impact

	Before Azure SQL Database and Azure SQL Managed Instance	With Azure SQL Database and Azure SQL Managed Instance	Difference	Benefit
Management of IT infrastructure, FTE per organization per year	15.2	10.8	4.3	29%
Equivalent value of staff time per year	$1.52M	$1.08M	$434,000	29%

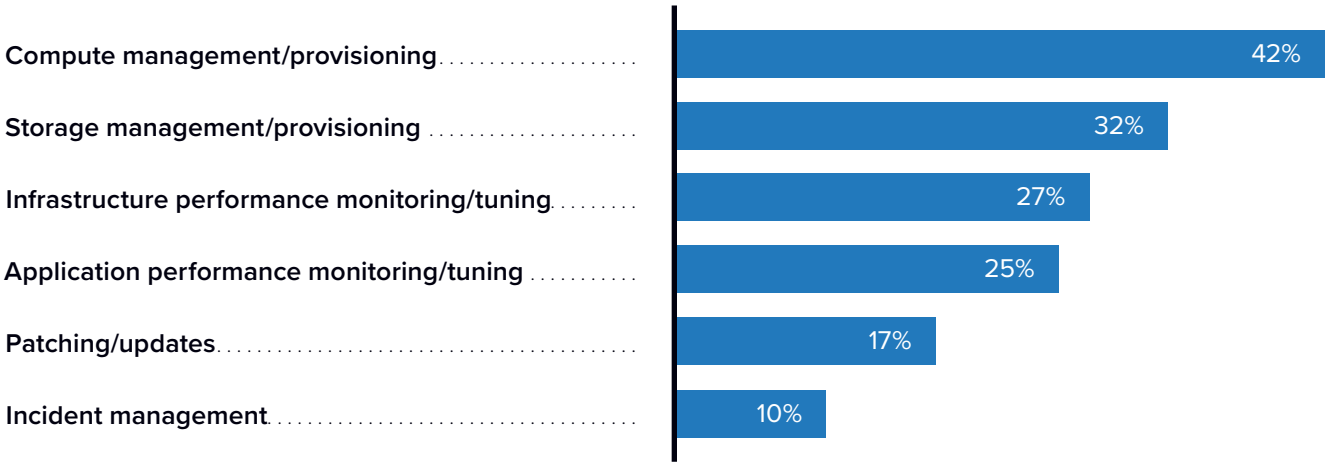
Source: IDC Business Value Research, June 2023

IDC then drilled down on these impacts by analyzing various and typical activities that IT infrastructure teams are engaged in performing. As shown in **Figure 2** (next page), after adoption, the greatest improvements were seen in compute management/provisioning (42% improvement); storage management/provisioning (32%); and infrastructure performance monitoring/tuning (27%). Additional metrics are presented.

FIGURE 2

IT Infrastructure Impact by Activity

(Percentage quicker)



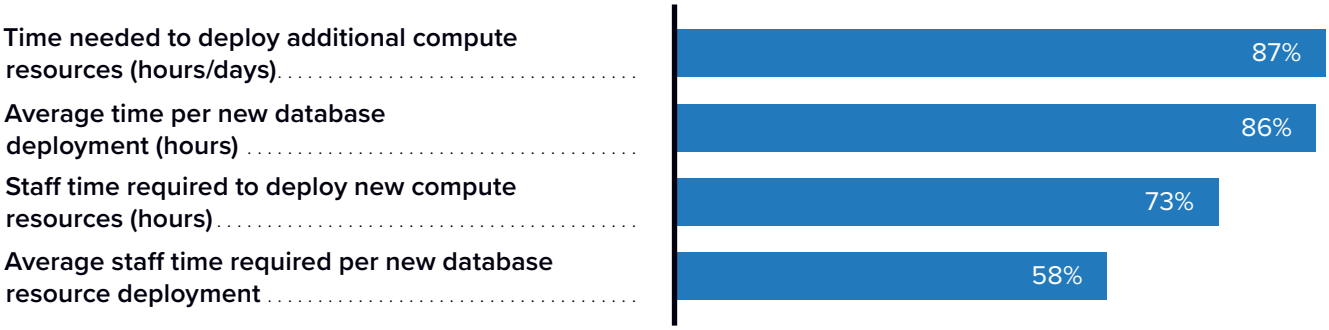
n = 8; Source: IDC Business Value Research, June 2023

A core value proposition of Azure SQL Database and Azure SQL Managed Instance is database agility. Because DBA and IT staff could work more effectively, organizations benefited from improved speed in deploying new database and storage resources for line-of-business users. IDC used several KPIs to quantify this benefit. As shown in **Figure 3**, after deployment, the greatest improvements were seen in time needed to deploy additional compute resources (87% less); average time for new database deployment (86% faster); and staff time required to deploy new compute resources (73% less).

FIGURE 3

Infrastructure/Database Agility Impact

(Percentage less)



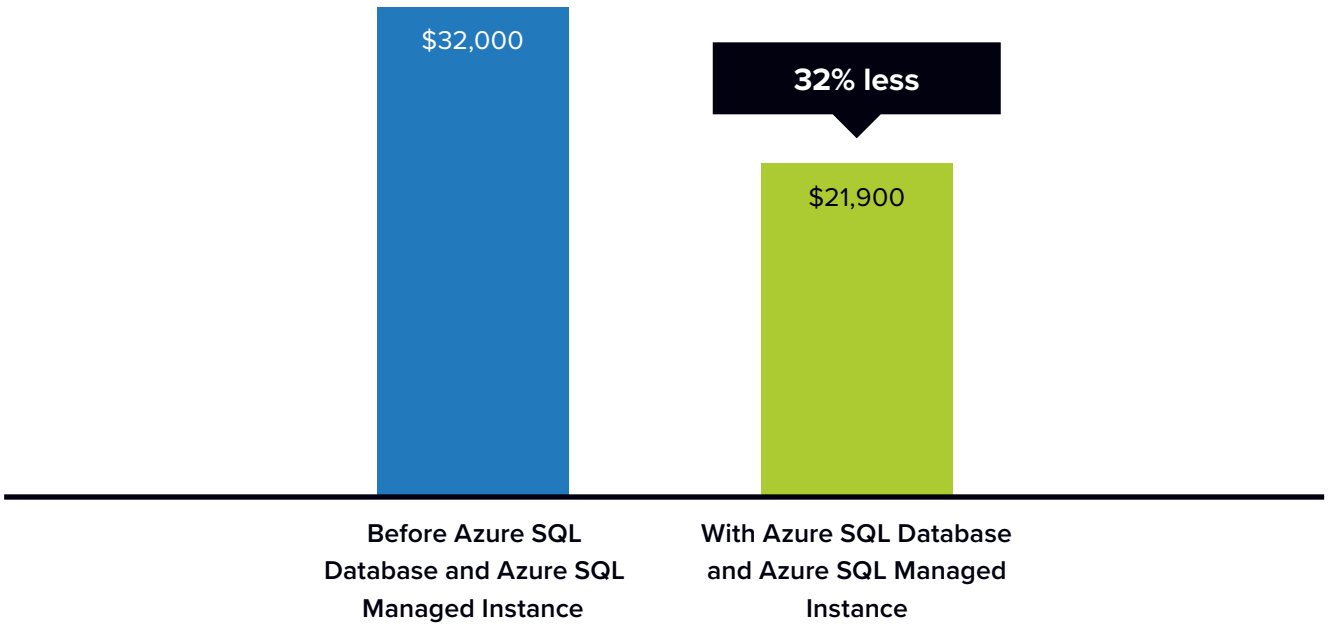
n = 8; Source: IDC Business Value Research, June 2023

The next area that IDC evaluated was the cost effectiveness of both IT infrastructure and operations using Azure SQL Database and Azure SQL Managed Instance. These results are presented in **Figure 4** beginning with infrastructure savings. As shown, over a projected five-year period, IDC's analysis shows that study participants experienced a 32% reduction when compared against previous or alternative approaches.

FIGURE 4

IT Infrastructure Savings per Business Application, Five Years

($ per five years)



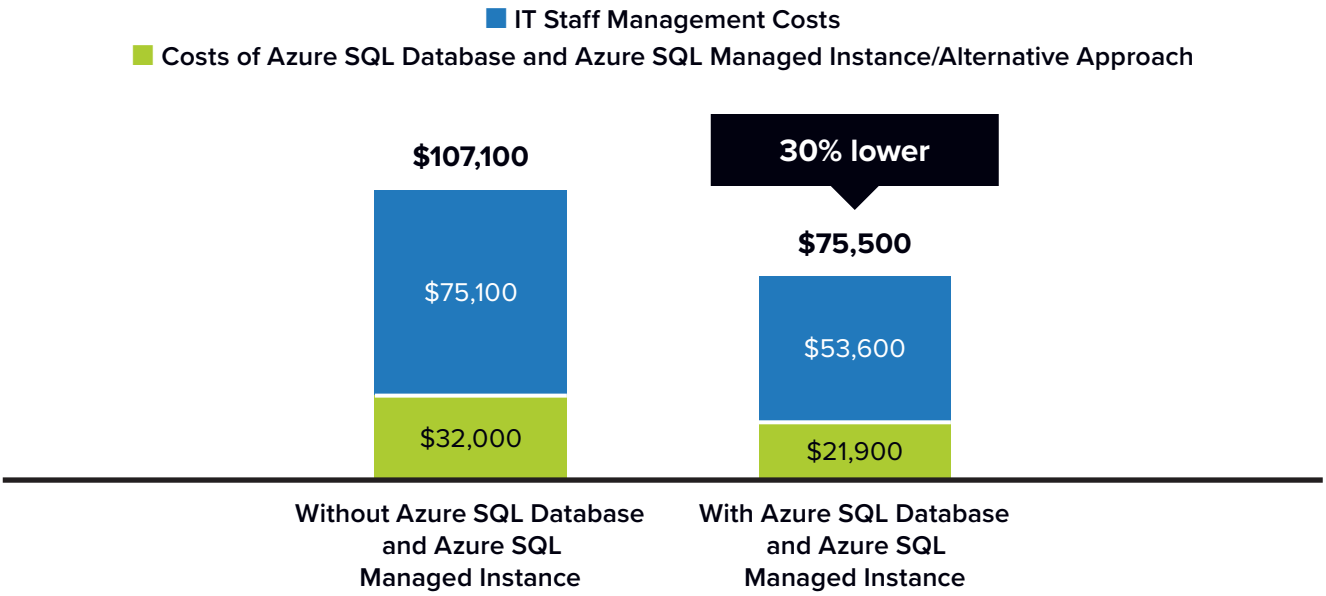
n = 8; Source: IDC Business Value Research, June 2023

In addition, as noted from **Table 5** and **Figure 4**, study participants reported that their operational costs (including both infrastructure and staff costs) were reduced. Additional calculations (**Figure 5**, next page) show that the cost of operations was reduced 30% with Azure SQL Database and Azure SQL Managed Instance due to easier management and reduced infrastructure costs.

FIGURE 5

Cost of Operations per Business Application, Five Years

($ per five years)



n = 8; Source: IDC Business Value Research, June 2023

For an accessible version of the data in this figure, see Figure 5 Supplemental Data in Appendix 2.

Interviewed companies also reported that their security teams also experienced benefits. Organizations told IDC that they appreciated the various built-in Azure security tools. As one study participant noted: *"We leverage the Microsoft E5 Security Suite and the security center in Azure. We love that tool because it gives us an overview of not just SQL, but also an overview of Azure and tells us how secure it is. It gives you the specifics of what you need to correct and then it's a click of a button for Azure to correct it for you."*

Table 6 (next page) quantifies these impacts, showing that interviewed companies saw a 25% improvement in team productivity and effectiveness after adoption. This equated to about 4.8 FTEs freed up and an annual productivity-based business value of $476,800 for each organization.

TABLE 6

IT Security Staff Impact

	Before Azure SQL Database and Azure SQL Managed Instance	With Azure SQL Database and Azure SQL Managed Instance	Difference	Benefit
IT infrastructure security management, FTE equivalent per organization per year	18.9	14.1	4.8	25%
Equivalent value of staff time per year	$1.89M	$1.41M	$476,800	25%

Source: IDC Business Value Research, June 2023

Business Improvements and Impacts

Interviewed companies told IDC that after implementing Azure SQL Database and Azure SQL Managed Instance they experienced measurable benefits for their business operations. Better application development processes, better use of data analytics, and improved agility in provisioning IT resources were all important contributing factors. In their comments, companies noted that Azure SQL helped improve both the quality of data and the quality of service that their customers experienced. They highlighted increases in potential revenue capture and pointed out that their developers were able to bring new applications to market more quickly in response to evolving market need.

Study participants elaborated on these benefits:

Can open up new capabilities, healthcare:

"Azure SQL is definitely helping us improve the quality of our data. I think it's also going to start to affect the quality of service the patients are getting. For example, the cardiology team is using machine modeling to diagnose things that are wrong with the heart that the naked eye can't see. So, they do an ECG, and they look at that picture, but they can't tell anything. Now, they're trying to run it for machine modeling so that the model will be able to tell that there is something wrong with that ECG and that they should be scheduled for an Echo immediately. Just think of how this is going to save lives."

Increased potential revenue capture, retail:

"The quality of data is definitely better because we are able to do targeted marketing right now. We are able to mine the data from the historical sales pattern we have. We are able to send targeted emails and campaigns, and this is adding additional revenue for us. In the last two quarters, I would say it's bringing in 7%–10% additional revenue."

Developers are faster to market, professional services:

"We created an Azure custom app with an Azure SQL back end in about a week and then released it to a client from a beta perspective. This was important because it was a client that we were at risk of losing to a competitor. Our client said that if we could prove to them in less than two weeks that we will have this new functionality, then they would stay. It was all hands on deck. We deployed this app and managed it with this client. And now we're going to be offering it to other clients. It's not a paid service, but a value add for the client, and it's helped maintain that relationship."

Users will save time as use cases expand in Azure SQL, financial services:

"The kind of conversations we have now have completely changed; efficiency is now the name of the game, so let's find ways to be efficient everywhere. The biggest thing is that's allowed us to just continue to grow, and we still haven't gotten into several fields that are of interest like AI, Crypto, those kinds of things. It's very easy to see in the next 12–18 months, adding another 2,000 people internally [to Azure SQL Database-supported uses] and what that's going to mean is you can add another 10%–15% efficiency. Now we're seeing the time savings in real time. It's insane that there are projects I work on that used to take me all week to put together, and now I can probably get this done before I turn my computer off today."

IDC quantified these anecdotal observations in several key areas, including analytics. Robust data analytics play an increasingly important role in delivering key insights to businesses to achieve desired business outcomes. Interviewed companies reported that Azure SQL Database and Azure SQL Managed Instance helped their analytics teams gain access to the data they needed quickly and with less friction. As one study participant noted: *"We use Power BI as our platform, so those BI engineers can just connect to those Azure instances without anything other than their credentials and the service account. When it's on-prem, we need to maintain this BI gateway, and it makes the reports run slowly because you're essentially going from Power BI down to your on-premises infrastructure to query this information and sync for the report to function. When we're leveraging [Azure SQL Managed Instance], we're just connecting to an Azure service, and they have a pretty good cloud network. The reports run faster, and they're able to start developing a report without involving the DBA or looking for additional permissions."*

Table 7 quantifies these impacts, showing that interviewed companies saw a 12% improvement in data analytics team productivity and effectiveness after adoption. This amounted to an addition of 2.1 FTEs and an annual productivity-based business value of $209,100 for each organization.

TABLE 7

Data Analytics Impact

	Before Azure SQL Database and Azure SQL Managed Instance	With Azure SQL Database and Azure SQL Managed Instance	Difference	Benefit
Analytics teams, FTE equivalent per organization per year	17.9	20.0	2.1	12%
Equivalent value of analytics team productivity, $ per year per organization	$1.79M	$2.00M	$209,100	12%

Source: IDC Business Value Research, June 2023

An important aspect of business resiliency in today's enterprise environments is the ability to mitigate and reduce the incidence of unplanned downtime. Interviewees told IDC that, after adoption, they were seeing fewer downtime incidents for their SQL-based applications and databases.

Table 8 (next page) shows reductions in unplanned downtime. The annual frequency of unplanned outages was reduced by 36%. Further, when disruptive events did occur, they were remediated 12% faster. These two improvement areas combined for an overall staff productivity boost of 56% and an annual business productivity savings of $437,300.

TABLE 8

Unplanned Downtime Impact

	Before Azure SQL Database and Azure SQL Managed Instance	With Azure SQL Database and Azure SQL Managed Instance	Difference	Benefit
Frequency per year	25.8	16.5	9.4	36%
Time to resolve (hours)	2.2	1.9	0.3	12%
Hours lost per user	2.2	1.0	1.2	56%
FTE impact, lost productivity due to unplanned outages	11.1	4.9	6.2	56%
Value of lost productivity	$780,300	$343,000	$437,300	56%

Source: IDC Business Value Research, June 2023

By reducing the amount of unplanned downtime in their SQL-based applications and databases, organizations were able to protect more revenue. As shown in **Table 9**, on average, organizations received total additional annual revenue of $922,800 as a direct result of Azure SQL Database and Azure SQL Managed Instance adoption.

TABLE 9

Unplanned Downtime Revenue Impact

Business Impact – Revenue Protected from Reduced Downtime	Per Organization
Total additional revenue per year	$922,800
Assumed operating margin	15%
Total recognized revenue, IDC model, per year*	$138,400

* The IDC model assumes a 15% operating margin for all additional revenue.
Source: IDC Business Value Research, June 2023

Another high-impact area that IDC studied is related to application development. Today's data assets are increasingly complex with data hosted on premises, in the cloud, or at the periphery. As a result, developers building business-critical applications can face such limitations as incompatible platforms, poor data security, or other complexities. Azure SQL is built upon the familiar SQL Server engine so that applications can be easily migrated with tools, languages, and resources that IT teams are already familiar with.

Study participants confirmed these benefits. Azure SQL enabled application development and DevOps teams gain better access to the resources and data they needed to move quickly and respond to fluctuating business needs and requirements. **Table 10** quantifies these benefits. As shown, interviewed companies saw a 27% productivity boost in the work performed by their application development teams. This amounted to the equivalent of adding 13 FTEs and resulted in an annual productivity-based business value of $1.30 million for each organization. In addition, companies were able to produce 52% more applications annually.

TABLE 10

Application Developer Impact

	Before Azure SQL Database and Azure SQL Managed Instance	With Azure SQL Database and Azure SQL Managed Instance	Difference	Benefit
AppDev, FTE equivalent per organization per year	47.5	60.5	13	27%
Number of new applications developed per year	6.1	9.3	3.2	52%
Development life cycle for new applications (weeks)	15.3	7.8	7.5	49%
Equivalent value of AppDev team productivity, $ per year per organization	$4.75M	$6.05M	$1.30M	27%

Source: IDC Business Value Research, June 2023

Continuing to look at business impacts, interviewed companies reported that their end users were more productive because they had a more reliable and scalable infrastructure platform that supported the databases and applications they used on a regular basis. As one study participant noted: *"These back-end workloads help support the user-based apps. Our end users use a lot of PowerBI reports and those benefits are good because with Azure SQL they can get the data faster. They are more productive, compared to on premises because the data is faster. I'll say they save five to ten minutes each per day."*

IDC's Business Value calculations confirmed that the Azure SQL platform had direct and measurable impacts on end user performance. **Table 11** quantifies these improvements and shows that 19,963 productive hours were gained per organization, translating into an average annual productivity-based business value of $743,300.

TABLE 11

End User Impact

	Per Organization
Number of users impacted	871
Average productivity gains	1.20%
Productive hours gained per organization	19,963
Productive hours gained per user	2.1
End user impact, FTE equivalent per organization per year	10.6
Value of end user time	$743,300

Source: IDC Business Value Research, June 2023

Other financial areas showed positive gains. Organizations reported that they had the opportunity to capture more revenue through a better applications process and/or an improved ability to leverage their data for more effective marketing campaigns. **Table 12** (next page) presents calculated revenue impacts from better addressing business opportunities. The total average annual revenue that accrued after deployment of the Azure SQL platform was $5.93 million.

TABLE 12

Business Operations and User Impact

	Per Organization	Per Business Application	Per Database	Per 100 Users
Total additional revenue per year	$5,928,600	$58,800	$91,700	$61,700
Assumed operating margin	15%	15%	15%	15%
Total recognized revenue, IDC model, per year*	$889,300	$20,000	$13,800	$9,200

* The IDC model assumes a 15% operating margin for all additional revenue.
Source: IDC Business Value Research, June 2023

ROI Summary

IDC's analysis of the financial and investment benefits related to study participants' use of Azure SQL Database and Azure SQL Managed Instance is presented in **Table 13** (next page). IDC calculates that, on a per-organization basis, interviewed organizations will achieve a total discounted three-year benefit of $10.7 million ($106,500 per application) based on better IT team productivity, more efficient application development, and improved business results. These benefits compare with projected total discounted investment costs over three years of $2.12 million ($21,000 per application) on a per-organization basis. At these levels of benefits and investment costs, IDC calculates that these organizations will achieve a five-year ROI of 406% and break even on their investment in approximately six months.

TABLE 13

Three-Year ROI Analysis

	Per Organization	Per Business Application	Per Database	Per 100 Users
Benefit (discounted)	$10.70M	$106,500	$166,100	$111,700
Investment (discounted)	$2.12M	$21,000	$32,800	$22,100
Net present value (NPV)	$8.62M	$85,400	$133,200	$89,600
ROI (NPV/investment)	406%	406%	406%	406%
Payback period	6 months	6 months	6 months	6 months
Discount factor	12%	12%	12%	12%

Source: IDC Business Value Research, June 2023

Challenges/Opportunities

Databases in the cloud are faced with an unprecedented number of new demands, including ever-rising data volumes, increasing variety of data types, streaming data support, and support for various forms of machine learning and artificial intelligence. Microsoft, like every other cloud DBMS provider, needs to remain nimble and innovative in order to stay ahead of customer needs and demands in the public cloud. Leveraging its long history of providing database support must be seen as giving Microsoft an advantage in addressing these challenges and exploiting the new opportunities that they represent.

Conclusion

Migrating to the public cloud is always fraught with risk and complexity. Risk and complexity factors can be greatly magnified when moving to a new database platform, or can be significantly mitigated when the target database platform is familiar. Of course, being familiar is not enough. It is also necessary that the new database platform be feature-rich, reliable, and easy to manage, and that it deliver better performance than the original on-premises platform. All this has been demonstrated in the experiences of the users in this study who migrated from on-premises Microsoft SQL Server to either Azure SQL Database or Azure SQL Managed Instance.

In many cases, it has been found that those who migrate to the public cloud find the new database platform is more operationally expensive than the on-premises one. That was not the case here. Thanks to the many self-managing features built into these two database services, the operational efficiency of these platforms on Microsoft Azure, and the helpful and knowledgeable Microsoft support staff, operational costs were cut significantly. In addition, DBAs were relieved of tasks generally considered routine and of low value, and were able to provide much more significant support for database users. Also, because the target cloud environment, including the chosen database service, are compatible with the prior on-premises environment, users were able to continue to use their familiar query, reporting, and analytic tools, such as Power BI, without adjustment.

Moving to the public cloud doesn't have to be scary. For Microsoft shops, the Azure database services and tools offer familiarity, higher levels of functionality, and lower cost than on-premises SQL Server, according to the users we interviewed for this study. Users of Microsoft SQL Server should take a hard look at the results of this study and consider transitioning to either Azure SQL Database or Azure SQL Managed Instance.

Appendix 1: Methodology

IDC's standard ROI methodology was utilized for this project. This methodology is based on gathering data from current users of Azure SQL Database and Azure SQL Managed Instance.

Based on interviews with these organizations, IDC performed a three-step process to calculate the ROI and payback period:

1. **Gathered quantitative benefit information during the interviews using a before-and-after assessment of the impact of Azure SQL Database and Azure SQL Managed Instance.** In this study, the benefits included IT cost reductions and avoidances, staff time savings and productivity benefits, and revenue gains.
2. **Created a complete investment (three-year total cost analysis) profile based on the interviews.** Investments go beyond the initial and annual costs of using Azure SQL Database and Azure SQL Managed Instance Workloads and can include additional costs related to migrations, planning, consulting, and staff or user training.
3. **Calculated the ROI and payback period.** IDC conducted a depreciated cash flow analysis of the benefits and investments for the organizations' use of Azure SQL Database and Azure SQL Managed Instance Workloads over a three-year period. ROI is the ratio of the net present value (NPV) and the discounted investment. The payback period is the point at which cumulative benefits equal the initial investment.

IDC bases the payback period and ROI calculations on a number of assumptions, which are summarized as follows:

- Time values are multiplied by burdened salary (salary +28% for benefits and overhead) to quantify efficiency and productivity savings. For purposes of this analysis, IDC has used assumptions of an average fully loaded $100,000 per year salary for IT staff members, and an average fully loaded salary of $70,000 for non-IT staff members. IDC assumes that employees work 1,880 hours per year (47 weeks x 40 hours).
- The net present value of the three-year savings is calculated by subtracting the amount that would have been realized by investing the original sum in an instrument yielding a 12% return to allow for the missed opportunity cost. This accounts for both the assumed cost of money and the assumed rate of return.
- Further, because Azure SQL Database and Azure SQL Managed Instance Workloads require a deployment period, the full benefits of the solution are not available during deployment. To capture this reality, IDC prorates the benefits on a monthly basis and then subtracts the deployment time from the first-year savings.

Note: All numbers in this document may not be exact due to rounding.

Appendix 2: Supplemental Data

The table in this appendix provides an accessible version of the data for the complex figure in this document. Click "Return to original figure" below the table to get back to the original data figure.

FIGURE 5 SUPPLEMENTAL DATA

Cost of Operations per Business Application, Five Years

	Without Azure SQL Database and Azure SQL Managed Instance	With Azure SQL Database and Azure SQL Managed Instance
IT staff management costs	$75,100	$53,600
Costs of Azure SQL Database and Azure SQL Managed Instance/Alternative Approach	$32,000	$21,900
Total	**$107,100**	**$75,500**

Source: IDC Business Value Research, May 2023

Return to original figure

About the IDC Analysts

Harsh Singh

Senior Research Analyst, Business Value Strategy Practice, IDC

Harsh V. Singh is a senior research analyst for IDC's Business Value Strategy Practice, responsible for developing return-on-investment and cost-savings analysis on enterprise technological products. Harsh's work covers various solutions that include datacenter hardware, enterprise software, and cloud-based products and services. Harsh's research focuses on the financial and operational impact these products have on organizations that deploy and adopt them.

More about Harsh Singh

Carl W. Olofson

Research Vice President, Data Management Software, IDC

Carl Olofson has performed research and analysis for IDC since 1997, and manages IDC's Database Management Software service, as well as supporting the Data Integration Software service. Carl's research involves following sales and technical developments in the structured data management (SDM) markets, including database management systems (DBMS), dynamic data management systems, database development and management software, and dynamic data grid managers, including the vendors of related tools and software systems. Carl also contributes to Big Data research and provides specialized coverage of Hadoop and other Big Data technologies. Carl advises clients on market and technology directions as well as performing supply- and demand-side primary research to size, forecast, and segment the database and related software markets.

More about Carl W. Olofson

IDC Custom Solutions

IDC Research, Inc.
140 Kendrick Street, Building B, Needham, MA 02494, USA
T +1 508 872 8200

@idc @idc idc.com

International Data Corporation (IDC) is the premier global provider of market intelligence, advisory services, and events for the information technology, telecommunications, and consumer technology markets. With more than 1,300 analysts worldwide, IDC offers global, regional, and local expertise on technology and industry opportunities and trends in over 110 countries. IDC's analysis and insight helps IT professionals, business executives, and the investment community to make fact-based technology decisions and to achieve their key business objectives.